

Wild Vegetables and Daily Subsistence of the Chakma Ethnic Community in Khagrachari, Bangladesh

Shahida Taher¹, Najmun Naher^{2,*}, Mritunjoy Mojumder³

¹Department of Home Economics, Life and Earth Science Group, National University, Gazipur-1704, Bangladesh

²Department of Botany, Life and Earth Science Group, National University, Gazipur-1704, Bangladesh.

Orcid ID: <https://orcid.org/0009-0006-4746-6264>

Email ID: najmunsmriti@gmail.com

³Department of Geography and Environment, Life and Earth Science Group, National University, Gazipur-1704, Bangladesh.

Orcid ID: <https://orcid.org/0009-0006-6911-5334>

*Corresponding author

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Abstract— *The Chakma ethnic community is one of the prominent communities in Khagrachari district of Bangladesh. A survey was conducted to document the use of wild vegetables were used by the Chakma community in their daily dietary system. Secondary data were collected from published research articles and books. Ethnobotanical data were collected through semi-structured interviews and field observation conducted among Chakma households. Plants specimens were collected, identified using standard floras. A total of 31 non-cultivated vegetable species, belonging to 26 genera and 18 families were recorded. The most represented families including Araceae, Musaceae, Dioscoreaceae, and Zingiberaceae. Various plant parts such as leaves, young shoots, fruits, flowers were consumed, primarily prepared as boiled vegetables, curries or mixed dishes. Several species were also reported to have medicinal and nutritional importance, highlighting their multifunctional role in daily life. The vegetables include leaves, stems, flowers, tubers, fruits, shoots, and roots, providing vitamins A, B, and C, protein, carbohydrates, calcium, magnesium, and phosphorus, making them an affordable nutritional source. The findings underscore the importance of conserving indigenous knowledge and wild edible plant diversity to support sustainable food systems and biodiversity conservation in Bangladesh.*

Keywords— *Chakma community, Wild vegetables, Traditional knowledge, aliments, Bangladesh*

I. INTRODUCTION

The Chakma are an ethnic group native to the Indian subcontinent and the easternmost part of western Myanmar (Britannica, 2024; Banglapedia, 2021). They are the largest minority in the Chittagong Hill Tracts of southeastern Bangladesh and the largest in the Chakma Autonomous District Council of Mizoram, India. Significant populations also reside in Arunachal Pradesh, Tripura, and Assam. Bandarban district in the Chittagong Hill Tracts spans about 5,300 square miles and is home to many tribes, with the Chakma being the largest (Chakma Autonomous District Council, 2024; *Bandarban District*, 2025). Approximately 39,000 Chakma families live there. The Chakmas are divided into 31 clans or tribes, led by the Chakma Raja, a tribal chief historically recognized by the

governments of British India and Bangladesh (Chakma people, 2025; Faquire, 2019).

The Chittagong Hill Tracts (CHT) consist of the districts of Khagrachari, Rangamati, and Bandarban in southeastern Bangladesh. They cover 13,295 square kilometers, about 10% of Bangladesh's total land area (Khan et al. 2007). The region has a rich and diverse floristic composition, with a wide variety of plant species. Ethnic communities have lived in the area for generations, heavily relying on the hills' natural resources. The Chakma community is the largest in the CHT, especially in Khagrachari. They possess extensive traditional knowledge and include wild, non-cultivated vegetables and plants in their daily diets (Alcorn, 1981a; Alcorn, 1984 b; Bye, 1979). The traditional practice of jhum cultivation faces sustainability

challenges due to population growth, shorter fallow periods, and soil degradation. Introducing modern agricultural technologies, high-quality seeds, advances in horticulture, and developing strong market and value chains could help improve livelihoods and food security in the Chittagong Hill Tracts (CHT) (Rasul, 2007; FAO, 2011).

Indigenous people in Bangladesh, who mainly consume wild or non-cultivated foods, are better able to stay healthy. Eating wild edible plants is often linked to lower social status and can be seen as an insult due to a lack of knowledge. The literature shows that awareness of non-cultivated vegetables as food varies by location, gender, and age of the consumer (UNICEF, 2001). Therefore, the present study aims to: i) examine wild vegetables that are beneficial to health; ii) identify different types of wild vegetables are uses in daily life and find out medicinal value of wild vegetables.

II. MATERIALS AND METHODS

Study area

Khagrachari is a hill district in southeastern Bangladesh's Chittagong division. It is 87 km from the town of

Chittagong. The district covers 2,505.73 square kilometers. It borders the Indian state of Tripura to the north and west, the Rangamati district to the east, and the Chittagong district to the southwest (Figure 1). Geography The hilly landscapes of the Khagrachari region are highly undulating and forestry characterized by small valleys and riverine plain. The Chittagong Hill Tracts rise very steeply from the eastern bank of the Karnafuli River including narrow river valleys, with high hills towering above small streams and shriveled drainage. Climate and rainfall the district has a tropical monsoon climate with hot, humid summers and mild, dry winters; it has an annual average temperature of about 13°C to 34.6°C, with around 2,500–3,031 mm of rainfall per annum most of which occurs during the monsoon season from June to September. This climate, combined with a rugged topography, promotes thick vegetation and a wide coverage of forest in some areas and sensitivity to soil erosion and slope instability in others. A combination of hills, high rainfall and abundance of forest resources have resulted in unique ecological and land-use characteristics within the district (Khagrachari District, 2025).

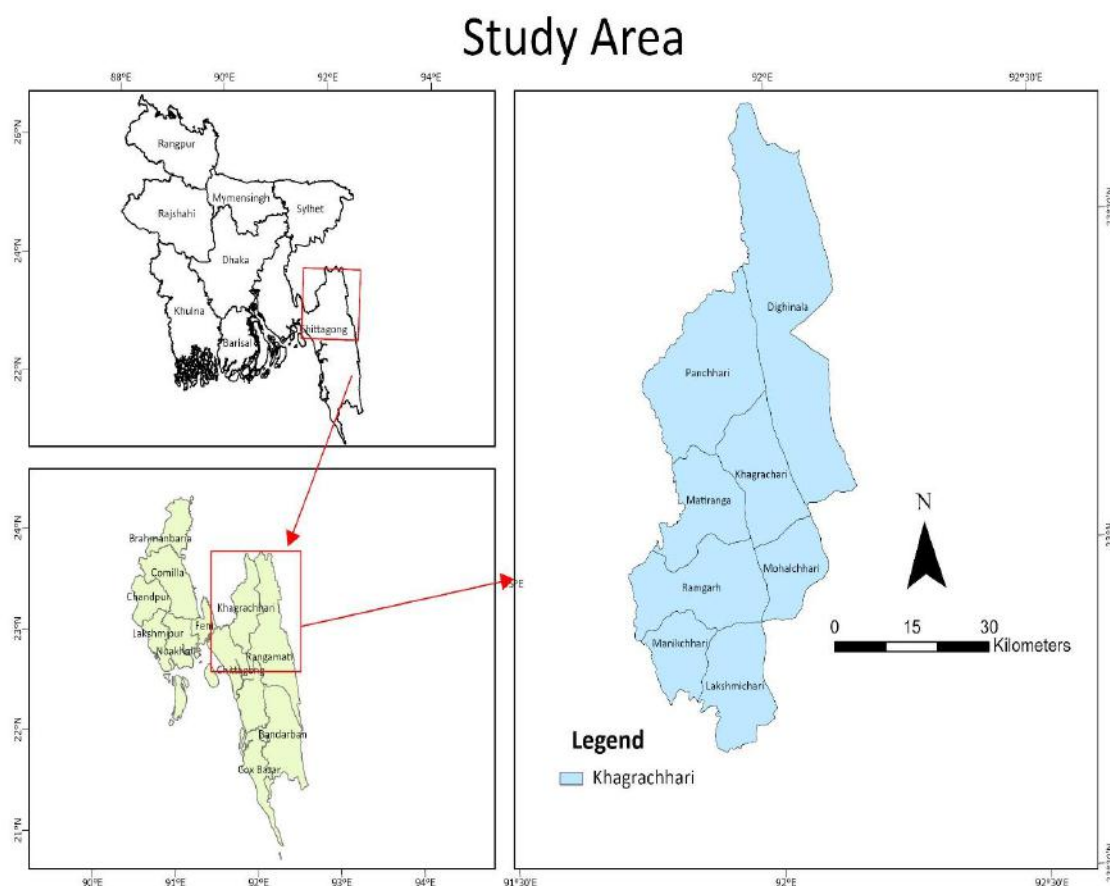


Fig.1. Study area of the Chakma ethnic community in Khagrachari, Bangladesh

Data collection

Data were collected from the Chakma tribal community through regular field visits and questionnaire surveys in the Dighinala and Mahalchhari areas of the Khagrachari district in Bangladesh. In-depth interviews were conducted, and markets were examined to assess the availability of non-cultivated vegetables. Interviews with men and women in the villages provided information on their uses, including the parts used and methods of preparation.

Plant Collection and Identification

Plant specimens were collected during guided field walks with local informants. Voucher specimens were prepared following standard herbarium techniques. Identification was carried out using relevant floras and taxonomic literature, including regional floras of Bangladesh. Scientific names were verified using recognized plant databases.

Ethical Considerations

The study was conducted in accordance with accepted ethical standards for ethnobotanical research. Participation was voluntary, and traditional knowledge was documented with respect for community rights and cultural sensitivity.

Data Analysis

Ethnobotanical data were analyzed using descriptive statistics to summarize species diversity, family representation, and plant parts used. The frequency of citation was used to assess the relative importance of each species within the community.

III. RESULTS

Basic Information of the Respondent Person

A survey was conducted in the Khagrachari Hill Tracts of Bangladesh for this study to document the use of wild vegetables by the Chakma ethnic community (Figure 1). A total of 150 respondent participated in the study, including 65 males (43.3%) and 85 females (56.7%). The age distribution is shown in Table 1. The largest age group was 26-36 years (50 respondents, 33.3%), followed by 37-47 years (26.7%) and 15-25 years (17.3%). Older age groups, 48-58 years and 59-69 years, had lower representation (16.7% and 6%, respectively). A Chi-square test was conducted to determine whether age distribution is associated with gender. The results showed no-significant dependence ($\chi^2 = 4.78$, $p = 0.311$), indicating that males and females were relatively evenly distributed across age groups (Table 1). This demographic profile suggested that the study included a representative sample of adults most

active in traditional knowledge and community participation.

Table 1: Age and gender distribution of the respondent of Chakma ethnic people

Age group	Male	Female	Total
15-25	8	18	26
26-36	20	30	50
37-47	18	22	40
48-58	15	10	25
59-69	4	5	9
Total	65	85	150
χ^2 (Chi-square) =			4.78
p-value =			0.311

Source: Field survey

The wild vegetables are used in daily life

The Chakma tribe has traditionally used various wild vegetables at either daily life or occasionally. People across all socio-economic groups within the tribe use these wild vegetables. To ensure year-round availability, they preserve them by drying, especially during unfavorable weather. A total of 31 non-cultivated vegetable species were documented from the Chakma community in Khagrachari, Bangladesh. These species belong to 26 genera and 18 families reflecting the high diversity of edible plants in the Chittagong Hill Tracts. The family with the highest representation included Araceae, Musaceae, Dioscoreaceae, and Zingiberaceae while, other families contributed one or two species each. This diversity highlights the community's dependence on both forest and fallow land resources for their daily diet.

Among the plant species herbs are frequently used followed by climbers, trees, respectively. The predominance of herbs and climbers indicates that most wild vegetables are easily accessible from undergrowth, trellises, or low-height shrubs, which facilitates daily harvesting. Leaves were the also the most frequently consumed part underscoring the importance of leafy greens in the Chakma diet. Chakma community also use flowers, different types of tuber, rhizomes for their daily diet (Table 2).

Food value of non-cultivated Vegetables

Chakma community consume leaves, fruits, shoots, flowers, tubers, petioles, ferns, central stems, twigs, tender stems, rhizomes, inflorescences, tuberous roots, and more (Table 2, Figure 2). These vegetables contain various

nutrients, including vitamins, protein, calcium, magnesium, and phosphorus. The documented wild vegetables are nutritionally diverse, providing essential vitamins A and C, minerals such as calcium, potassium, and iron, dietary fiber, proteins, and carbohydrates. Tubers and rhizomes of species like *Dioscorea* sp. contribute significantly to household energy needs, while leaves and

young shoots supply micronutrient that complement cultivated foods. Bamboo shoots are particularly valued during monsoon and post-monsoon seasons. The diversity of plant species and parts used ensure nutritional adequacy and dietary variety, while their seasonal availability demonstrates the sustainable use of forest and agroforestry resources.

Table 2. Non-cultivated vegetables used by the Chakma tribe for daily diet

S. No	Local name	Scientific name	Family	Habit	Plant parts use	Mode of usage	Food value	References
1.	Dhekishak	<i>Ampelopte risprolifer a</i> (Retz.) Copel	Polypodiaceae	Herb	Tender fronds	Cooked as vegetables	Vitamin A, C	FAO (2013), Gopalan et al. (2012), Kabir (1987)
2.	Bash Korol	<i>Bambusa bambusa</i> Roxb.	Poaceae	Rhizom	Young shoots	Cooked as a curry	Protein, Carbohydrates, fiber, minerals.	FAO (2013), Satheesh and Workneh (2023), Khan et al. (2007), Kabir (1987), Ahmed (2005)
3.	Shimulphul	<i>Bombax ceiba</i> L.	Malvaceae	Tree	Fresh & dry Flowers	Cooked as vegetables and curry	Protein, Carbohydrates, Calcium, Magnesium, Phosphorus.	Gopalan et al. (2012), Longvah et al. (2017), Hassan 2010.
4.	Shimul Alu	<i>Manihot esculenta</i> Crantz	Euphorbiaceae	Tree	Root	Cooked as vegetables and curry	Carbohydrates, vitamin C, A	Gopalan et al. (2012), Hassan (2010), Khan et al. (2007), Kabir (1987), Satheesh and Workneh (2019)
5.	Bat batishak	<i>Commelin abenghale nsis</i> L.	Commelinaceae	Herb	Young leaves	Cooked as vegetables	vitamin A, C	FAO (2013), Longvah et al. (2017), Khan et al. (2007)
6.	Holudphul	<i>Curcuma longa</i> L.	Zingiberaceae	Herb	Flower	Cooked and consumed as vegetables	Fiber, vitamin Calcium,, Curcumin, Antioxidant	FAO (2013), Gopalan et al. (2012), Hassan, 2010.
7.	Shora-alu	<i>Dioscorea belophylla</i> (Prain) Voigt ex Haines	Dioscoreaceae	Climber	Tubers	Cooked in curry	Protein, Carbohydrates, fiber, minerals	Coursey (1967), Longvah et al. (2017), Khan et al. (2007)
8.	Ban-alu	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Climber	Tubers	Boiled tubers and bulbils are eaten in curry	Carbohydrates, fiber, minerals	Coursey (1967), Gopalan et al. (2012)
9.	Hormujshak	<i>Ipomoea aquatica</i> Forst.	Convolvulaceae	Climber	Tender shoots	Cooked as vegetables	Vitamin A, C, minerals	Gopalan et al. (2012), Longvah

		rssk.						et al. (2017)
10	Pahari kola gach	<i>Musa ornate</i> Roxb.	Musaceae	Tree-like herb	Central stem, Inflorescence	Used as vegetables	Vitamin A, C, Iron, Calcium, Potassium	Singh et al. (2016), Longvah et al. (2017)
11	Aitta kola	<i>Musa paradisica</i> L.	Musaceae	Tree-like herb	Central stem, Inflorescence and Fruits	Used as vegetables	Vitamin A, C, Iron, Calcium, Potassium	Singh et al. (2016), Gopalan et al. (2012), Khan et al. 2007
12	Ada phul	<i>Zingiber officinale</i> Roscoe.	Zingiberaceae	Herb	Flowers	Cooked, and consumed as vegetables	Vitamins, Protein, Carbohydrates, minerals	Gopalan et al. (2012), FAO (2013)
13	Lang modon	<i>Pogostemon parviflorus</i> Benth	Lamiaceae	Herb	Leaves, Twigs	Cooked as vegetables	Vitamin A, C,	FAO (2013)
14	Lelompata	<i>Premna esculenta</i> Roxb.	Lamiaceae	Shrub	Young leaves	Young leaves are cooked as vegetables.	Vitamin A, C, minerals	FAO (2013), Rashid et al. (2018)
15	Sabarang Patra	<i>Ocimum americanum</i> var. pilosum (Willd.) A.J.Paton	Lamiaceae	Herb	Leaves	Cooked as spices for flavor	Vitamin A, C,	Gopalan et al. (2012)
16	Amila Hor	<i>Oxalis corniculata</i> L.	Oxalidaceae	Herb	Leaves, Fruit	Cooked as vegetables, pickles	Protein, carotene, vitamin B, C	Longvah et al. (2017), Gopalan et al. (2012), Hassan (2010).
17	Paharikolar mocha	<i>Musa Paradisiaca</i> L.	Musaceae	Tree-like herb	Flower	Cooked as vegetables	Vitamin-A, B6, C, E, Iron, Protein, Calcium, Fat, Potassium	Singh et al. (2016), Khan et al. (2007), Kabir (1987)
18	Mitha begun	<i>Solanum torvum</i> Swartz	Solanaceae	Shrub	Immature fruits	Cooked as vegetables	Fiber, vitamins, minerals	Choudhary et al. (2008), Gopalan et al. (2012), Ahamed, 2005
19	Boronashak	<i>Zanthoxylum armatum</i>	Rutaceae	Herb	Leaves	Cooked as spices for flavor	Vitamin A, C, and minerals	FAO (2013), Rashid et al. (2018)
20	Tara	<i>Alpinia nigra</i> (Gaertn.) Burt.	Zingiberaceae	Herb	Rhizome	Cooked and consumed as curry	Iron, Calcium, Potassium	Gopalan et al. (2012), FAO (2013)
21	Ozonshak	<i>Spilanthes calva</i> DC.	Asteraceae	Herb	Leaves, flowers	Cooked as vegetables	Vitamin A, C, minerals	FAO (2013)
22	Honagulo	<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae	Medium tree	Flowers and fruit	Cooked as vegetables	Fiber, vitamins, minerals	Longvah et al. (2017), Rashid et al. (2018)
23	Simulshigri	<i>Marsilea</i>	Marsileaceae	Herb	Leaves	Cooked as	Vitamin A, C,	Gopalan et al.

.		<i>inuta L.</i>	ae			vegetables	minerals	(2012), FAO (2013), Hassan 2010.
24	Bon kumra	<i>Trichosanthes cucurbitina L.</i>	Cucurbitaceae	Climber	Fruit	Cooked as vegetables	Fiber, Vitamin C	Longvah et al. (2017), Ahamed (2005)
25	Bon kakrol	<i>Momordica dioica Roxb.</i>	Cucurbitaceae	Climber	Fruit	Cooked as vegetables	Fiber, vitamins, minerals	Gopalan et al. (2012), Longvah et al. (2017), Khan et al. (2007)
26	Kachi alu	<i>Dioscorea opposita Thunb.</i>	Dioscoreaceae	Climber	Tubers	Boiled	Carbohydrates, fiber, minerals	Coursey (1967), Gopalan et al. (2012), Ahamed, (2005)
27	Panishak	<i>Centella asiatica (L.) Urb.</i>	Apiaceae	Herb	Leaves	Cooked as vegetables	Vitamin A, C	Gopalan et al. (2012), Hassan 2010.
28	Bon shak	<i>Basella alba L.</i>	Basellaceae	Climber	Leaves	Curry	Vitamin A, C, minerals	Gopalan et al. (2012), Longvah et al. (2017), Ahamed, 2005
29	Kola shigri	<i>Hydrocotyle javanica Thunb.</i>	Araliaceae	Herb	Leaves	Raw or cooked	Vitamins, minerals	FAO (2013)
30	Mulishak	<i>Lasia spinosa (L.) Thwaites</i>	Araceae	Herb	Petiole	Cooked as vegetables	Fiber, minerals, Vitamin C	Gopalan et al. (2012), Rashid et al. (2018)
31	Bon bamboo	<i>Melocanna baccifera (Roxb.) Kurz</i>	Poaceae	Bamboo	Young shoots	Boiled or curry	Protein, fiber, minerals	Satheesh and Workneh (2013), FAO (2013), Ahamed (2005)

Green vegetables are typically rich in nutrients and are protective and cost-effective foods. However, traditional knowledge among the Chakma tribal community about the use of plants is dwindling due to urbanization, rapid development activities, and a lack of interest among the younger generation. Documentation of useful non-cultivated or wild vegetables and plants is steadily declining. This knowledge could be lost soon without efforts to educate the younger generations about its significance.

Wild leafy vegetables are used as medicine during treatment for common ailments

The Chakma tribe used many leafy vegetables as medicine for various diseases, including jaundice, diarrhea, diabetes, stomach pain, arthritis, skin diseases, fever, cough, and Chicken pox. Results from the present study, showed that ethnomedicinal use of different plants. Chakma ethnic community prevent 09 common diseases by using different plant species. These species belong to 8 different plant families, including Bignoniaceae (*Oroxylum indicum*), Apiaceae (*Centella asiatica*), Piperaceae (*Piper betle*), Ranunculaceae (*Nigella sativa*), Zingiberaceae (*Curcuma longa* and *Zingiber officinale*), Meliaceae (*Azadirachta indica*), Lamiaceae (*Ocimum tenuiflorum*), and Commelinaceae (*Commelina benghalensis*) (Table 3).

Table 3. Leafy vegetable and plants are used by Chakma community for common ailments

Sl. No	Disease	Local Name	Scientific Name	Family	Plant part used
1	Jaundice	Honagula	<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae	Bark
2	Diarrhea	Thankuni	<i>Centella asiatica</i> (L.) Urban	Apiaceae	Leaves
3	Diabetes	Betel leaf	<i>Piper betle</i> L.	Piperaceae	Leaves
		Black cumin	<i>Nigella sativa</i> L.	Ranunculaceae	Seeds
4	Stomach pain	Thankunipata	<i>Centella asiatica</i> (L.) Urban	Apiaceae	Leaves
		Halud	<i>Curcuma longa</i> L.	Zingiberaceae	Rhizome
5	Arthritis	Ada	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Rhizome
		Neem	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Leaves
6	Skin diseases	Tulshi	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Leaves
		Tulshi	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Leaves
7	Fever	Halud	<i>Curcuma longa</i> L.	Zingiberaceae	Rhizome
		Ada	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Rhizome
		Honey	<i>Apis mellifera</i>	Apidae	Honey
8	Cough	Tulshi	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Leaves
		Thankuni	<i>Centella asiatica</i> (L.) Urban	Apiaceae	Leaves
9	Chicken pox	Hedabatashak	<i>Commelinabenghalensis</i> L.	Commelinaceae	Leaves

Source: Field survey

They administer these medicines to pregnant women and children. They believe these leafy medicines are not harmful to their health. First, they use this leafy medicine, and if necessary, they visit a doctor for further treatment. Sometimes, they grow leafy vegetables specifically for medical purposes. The older Chakma people pass down traditional treatment techniques to their descendants. Leaves were the most frequently used plant part, utilized in treatments for diarrhea, stomach pain, fever, cough, and

skin diseases, demonstrating the community's preference for leafy vegetables as accessible and effective remedies. Rhizomes of turmeric and ginger were commonly employed for arthritis and fever, highlighting the therapeutic importance of aromatic plants. Some remedies combined multiple species, such as tulsi, turmeric, and ginger for fever, or tulsi, honey, and thankuni for cough, reflecting the holistic and synergistic approach of Chakma traditional medicine.



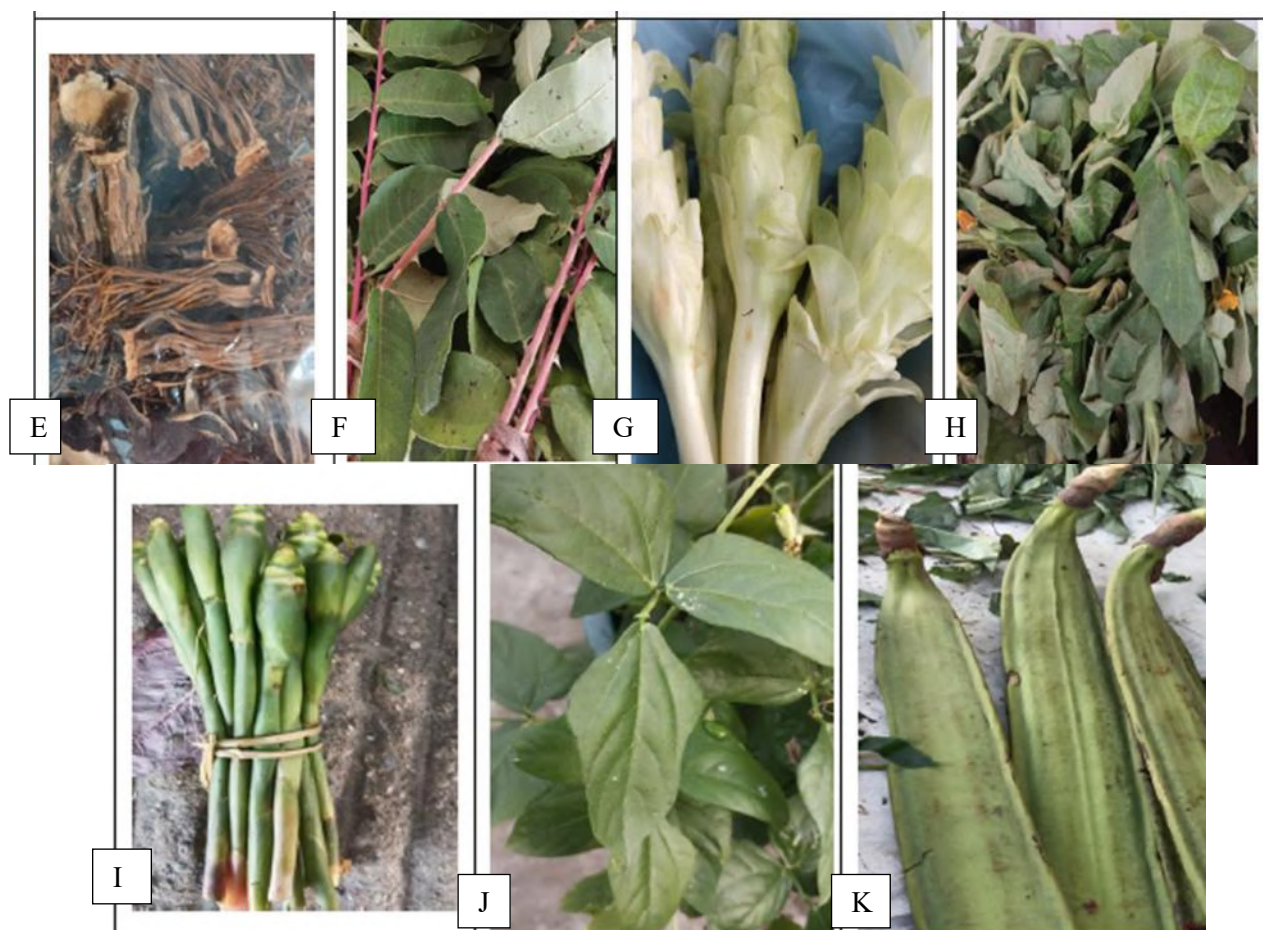


Fig.2. Photograph of non-cultivated vegetables used by the Chakma tribe: A. *Solanum torvum* (Mitha begun), B. *Ocimum americanum* (Sabarang Pata), C. *Alpinia nigra* (Tara), D. *Musa paradisiaca* (Pahari kola gach), E. *Bombax ceiba* (Dry Shimulphul), F. *Zanthoxylum laetum* (Boronashak), G. *Curcuma longa* (Holudphul), H. *Spilanthes calva* (Ozonshak), I. *Zingiber officinale* (Ada phul), J. *Commelinabenghalensis* (Batbatishak), K. *Oroxylum indicum* (Honagulo).

IV. DISCUSSION

The present study documented a total of 32 non-cultivated wild vegetable species used by the Chakma community in Khagrachari, Bangladesh, highlighting the rich ethnobotanical knowledge of this indigenous group. The species belong to 26 genera and 18 families, with Araceae, Musaceae, Dioscoreaceae, and Zingiberaceae being the most represented, reflecting both ecological abundance and cultural preference (Paul et al. 2016, Alam et al. 2024, Rahman, & Alam, 2016; Miah et al. 2012, Koike, & Muhammed, 2012). Such diversity is consistent with prior ethnobotanical studies in the Chittagong Hill Tracts, which reported extensive use of wild vegetables among Chakma and other ethnic communities (Rahman, & Hossain, 2024). They continually explore and experiment with different foods to enhance their quality of life. The Chakma diet is primarily based on crops grown in the jungle, natural vegetables from the mountains, as well as fish and meat. One of the characteristics of their cooking is that they often cook without oil or with minimal oil. Where

the use of bamboo shoots and dried mushrooms is very popular, steaming and boiling methods are more common in their cooking, and mild spices and hill chilies are used. 'Bachchuri', 'Pajan' (a mixture of dried fruits and vegetables), 'Mach Khola', and 'Jhinghe Pokha Fajha with Ginger Flowers' are examples of their traditional dishes. Fresh vegetables, vine leaves, herbal ingredients, and various types of mountain vegetables are used more often. This reflects cultural culinary practices and the adaptation of wild vegetables into local diets to enhance palatability and nutrient availability (Miah et al., 2012; Anonymous, 2016). Similar patterns have been observed among other indigenous communities in the region, where the majority of wild vegetables are cooked with spices or in mixed dishes rather than consumed raw (Paul et al., 2016). Overall, the results indicate that the Chakma community maintains a diverse and culturally significant use of wild vegetables, with cooking practices reflecting both preference and tradition. The study provides a quantitative and qualitative basis for recognizing the

importance of wild vegetables in sustaining nutrition, cultural identity, and ecological knowledge in rural Bangladesh.

V. CONCLUSION

The findings of this study suggest that wild or non-cultivated vegetables play a vital role in the socio-economic well-being of rural tribes in Khagrachari, a district of Bangladesh. To address their needs, the government could implement programs that engage the local community in managing these vegetables through a care-and-share approach. Additionally, measures should be taken to integrate these vegetables into key agroforestry systems. Nutrition policies should encourage the use of non-cultivated vegetables as part of a strategy to enhance food security, nutrition, and the livelihoods of rural populations in Bangladesh. Now is the time to actively promote these plants and vegetables for daily human food and nutrition.

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